MTH 245 – Group Project – Part 1

Choose the independent (explanatory) variable from your data set that has to do with the question/problem of interest. If you do this part of the project on both variables, you will lose points because this tells me you do not know which the independent variable is.

Download the FREE-to-JTCC-students version of MS Office found on the Blackboard homepage. If you use an older version, you may not have all the needed features. Instructions for the following and other parts of the project can be found in the **Excel Help tab in Blackboard**! DO ALL STEPS (except #1&2) USING EXCEL FEATURES OR COMMANDS! You will lose points if you do the work using a calculator and type your answer in Excel.

1. What is the population of interest? What is the representative sample? (2 points) If this is not apparent from the data, give your best idea of what the population and sample should be.

Use Excel to:

2. Construct a histogram of the data with 5 to 10 bins (classes) and *comment on its shape* (symmetry, skewness, modes, etc.). (5 points)
3. Construct a frequency table that uses the same bins from your histogram in #2. Include a column that gives the relative frequency. This is the only numerical portion of this project that can be typed in "by hand" by copying information from your histogram! (3 points)
4. Construct a pie chart from the frequency table using the actual frequency. Include a key and the percentage from each category (4 points)
5. Find the mean, median, and mode of the data. (3 points)
6. Find the five-number summary of the data. (5 points)
7. Find the range and the standard deviation of the data using Excel equations, commands, or features. Do NOT use the "long" method to calculate standard deviation (2 points)
8. Construct a boxplot of the data (use the full set of data, not the five-number summary). Use the Excel Box and Whisker feature to create the boxplot! (2 points)
9. Choose the largest column from your histogram. Find the probability that your data falls in that bin. Do the same for the smallest column in your histogram. Find the probability that your data falls in both the largest bin or the smallest bin. (4 points)

Clarity, neatness (4 points)

TOTAL POINTS POSSIBLE: 34

Work on ONE file and pass it back and forth to one another. If you use multiple files and copy/paste, the graphs or calculations lose their connection to the data and are blank or incorrect when submitted. You will lose points for not having done that portion – I can only grade what I can see. You may not resubmit once your file is graded.

USE YOUR GROUP DISCUSSION BOARD and/or FILE EXCHANGE TO COMMUNICATE SO THERE IS A RECORD OF YOUR PARTICIPATION! Also, posts are listed in chronological order, so you know which attached file is most recent! You may use email or text to communicate, but I cannot see those, so they will not count as a record of your participation. Use those sparingly to tell group members to check the discussion board or file exchange.

Be sure to label each part properly and clearly. **Someone who doesn't know anything about your data set should be able to read and interpret everything easily.**

Work together to complete this part of the project. Each group member should contribute as equally as possible. Any group member that does not fully participate, will not receive the group grade. **YOU MUST CONTRIBUTE!**

One person in your group should upload ONE well-organized Excel file to the Assignment in Blackboard. Late submissions will have 5 points per day deducted from this grade. Everyone in the group is responsible for agreeing upon the final submission.

MTH 245 – Group Project – Part 2

DO ALL STEPS USING EXCEL EQUATIONS, FEATURES OR COMMANDS! You will lose points if you do the work using a calculator and type your answer in Excel.

Use the mean of the *independent* data (that you found in Part 1 of the project) to find the following:

1. The margin of error for the sample or population (whichever is represented by your data) mean for the 95% confidence interval. Be sure to use the appropriate formula for your data. Show your calculation. (2 points)
2. The 95% confidence interval. Interpret the meaning of your confidence interval as it applies to the probable population of interest you described in #4. Use complete sentences and round numbers appropriately for your data. (3 points)
3. The margin of error for the sample or population (whichever is represented by your data) mean for the 90% confidence interval. Be sure to use the appropriate formula for your data. Show your calculation. (2 points)
4. The 90% confidence interval. Interpret the meaning of your confidence interval as it applies to the probable population of interest you described in #4. Use complete sentences. (3 points)

Using both the independent variable and the dependent variable from your question of interest to do the following:

5. Create a scatter plot. Be sure the independent and dependent variables are on the correct axes of the graph. If needed, rescale the axes so the data is nicely spread out across the graph. (3 points)
6. Add the line of best fit to the graph. Add the equation of the trendline to the graph along with R^2. Calculate r using one of the Excel methods. (2 points)
7. State your conclusion about your question/problem of interest based on what you see in #1 and what you found in #2. State your conclusion clearly and explain how you know. Use complete sentences. (3 points)
8. Conduct a hypothesis test to test the significance of r using $\alpha = 0.05$. Show your calculation. State whether r is significant or not and how you know. (3 points)

Correctness, labels, clarity, neatness (4 points)

TOTAL POINTS POSSIBLE: 25

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USE YOUR GROUP DISCUSSION BOARD and/or FILE EXCHANGE TO COMMUNICATE SO THERE IS A RECORD OF YOUR PARTICIPATION! Also, posts are listed in chronological order, so you know which attached file is most recent! You may use email or text to communicate, but I cannot see those, so they will not count as a record of your participation. Use those sparingly to tell group members to check the discussion board or file exchange.

Be sure to label each part properly and clearly. **Someone who doesn't know anything about your data set should be able to read and interpret everything easily.**

Work together to complete this part of the project. Each group member should contribute as equally as possible. Any group member that does not participate, will not receive credit and/or will be removed from his/her group and will either complete the project on his/her own or with other non-participants. **YOU MUST CONTRIBUTE!**

One person in your group should upload ONE well-organized Excel file to the Assignment in Blackboard. Late submissions will have 5 points per day deducted from this grade. Everyone in the group is responsible for agreeing upon the final submission.

(Part 3 – short PowerPoint on what you investigated and what you found.)